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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,560	01/22/2002	Mou-Shiung Lin	JCLA8532	6103

7590
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12/17/2003

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/055,560	Applicant(s) LIN MOU SHIUNG	
	Examiner James M. Mitchell	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 61-138 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61-138 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 61- 63, 70,72- 75, 77-87, 89-112,114, 115,117-124, 126, 127, 129-134 and 136-138 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (US 6,359,320).

Yamazaki (Fig 1) discloses a chip packaging method comprising: providing a metal substrate (100) with a surface; providing a plurality of an inherent dies ("chip"; not labeled), wherein each die has an active surface, a backside that is opposite to the active surface, and a metal pads (portion of 119 in contact with active region) located on the active surface, whereas the backside of the die is adhered to the metal substrate, allocating a polyimide, first dielectric layer (118) on top of the surface and the active surfaces of the die, allocating a first patterned wiring layer/ pattern (horizontal portion of 119) is electrically connected to the first pads of the dies through the first dielectric, that extends to a region outside of an area above the active surfaces of the dies , and has a plurality of bond pads (127, 130) located on a surface layer of the thin-film circuit layer and each bonding pad is electrically connected to the corresponding metal pad of the

die; wherein the die has an internal circuitry and a plurality of active devices located on the active surface of the die and the internal circuitry is electrically connected to the active devices, whereas the internal circuitry forms the metal pads; wherein the dies perform different functions (via CMOS and Pixel Matrix) and the same function (TFT) wherein after attaching the dies and before allocating a filling layer (509, 112) on the top surface of the metal substrate and surrounding the peripheral of the of the dies; and forming through holes that penetrate the first dielectric; a patterned passivation, dielectric layer (125) on top of the first dielectric layer and the first patterned wiring layer and exposing bond pads ; and allocating a bonding point on the bonding pads; singulatzizing ("cut") the chip package on a plurality of dies that inherently singulates a single die (via single package) and removed a portion of filling and substrate (via lateral portion during cut); and second patterned wiring layer (vias) further comprising inherently filling second dielectric layer; further allocating a dielectric , patterned layer (129) on top of the second layer and the second wiring (128) with bonding points on second bond pads (horizontal portion of 127); disclose repeating step (a) and (b) a plurality of times.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (US 6,359,320) as applied to claim 70.

Yamazaki does not appear to explicitly disclose the filling element from a group consisting of either epoxy and polymer.

However examiner takes official notice that both epoxy and polymers are well known material in the art and that it would have been obvious to one of ordinary skill in the art to incorporate epoxy and polymers in order to provide passivation and dielectric layer. Furthermore, the claimed materials would have been obvious, since it has been held that to be within the general skill of a worker in the art to select known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (1960).

Claims 76, 88, 113 and 125 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (US 6,359,320) as applied to claim 61, 83 102, 120.

Yamazaki does not appear to explicitly disclose allocating wiring layers by sputtering.

Wojnarowski (Col. 7, Lines 5-9) utilizes sputtering.

It would have been obvious to one of ordinary skill in the art incorporate sputtering in the vias of Yamazaki in order to apply a metal as taught by Wojnarowski (Col.7, Lines 5-9).

Claims 116, 128, and 135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (US 6,359,320) as applied to claims 115, 127 and 134.

Yamazaki does not appear to disclose said bonding points are selected from a group consisting of solder balls, bumps and pins.

Examiner takes official notice that solder balls, bumps and pins were well known in the art at the time the invention was made and that it would have been obvious to incorporate bonding points from solder balls, bumps or pins, in order to provide external contacts.

Claims 61 and 64-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole Jr et al (US 5,704,984) in combination with Mowatt (US 5,432,677) and Dove et al (US 6,625,028).

Cole discloses a chip packaging method comprising: providing a substrate with a surface; providing a plurality of dies, wherein each die has an active surface, a backside that is opposite to the active surface, and a plurality of metal pads (12a) located on the active surface, whereas the backside of each die is adhered to the surface of the metal substrate; allocating a first dielectric layer (24) on top of the surface of the substrate and the active surface of the dies; and allocating a first patterned wiring layer on top of the first dielectric layer, wherein the first patterned wiring layer is electrically connected to the metal pads of the dies through the first dielectric layer, extends to a region outside of an area above the active surfaces of the dies, and has a plurality of first bonding pads; wherein the substrate has a plurality of inwardly

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protruded areas located on the surface of the substrate, where the backside of each die is adhered to a bottom of an inwardly protruded area; and a depth of the inwardly protruded areas is equal to a thickness of the dies; with said substrate inherently comprising a first metal and second metal layer with the second metal overlapping said first metal (vial material is comprised of multiple contiguous layers) with the first layer approximately equal to the thickness of the die.

Cole does not appear to disclose the substrate being metal or forming the protruded area by machining.

Mowatt shows that metal and ceramic substrates are equivalent structures known in the art known in the art. Therefore, because these two substrate structures are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a metal for a ceramic substrate.

Dove utilizes machining.

It would have been obvious to one of ordinary skill in incorporate a machining step with the modified substrate of Cole and Mowatt in order to form the cavity required in the substrate as disclosed in Cole ("chipwell"; Fig.1, item 10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Jmm



DAVID E. GRAVYLL
PRIMARY EX